AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1-22. (Canceled)

23. (New) A method for coupling a oligosaccharide comprising a phosphorylated hexose to a lysosomal enzyme, the method comprising the steps of:

(a) derivatizing the oligosaccharide comprising a phosphorylated hexose with a compound containing a carbonyl-reactive group;

(b) oxidizing the lysosomal enzyme to generate at least one carbonyl group on the lysosomal enzyme; and

(c) reacting the derivatized oligosaccharide with the oxidized lysosomal enzyme,

thereby coupling the oligosaccharide to the lysosomal enzyme.

24. (New) The method according to claim 23, wherein the phosphorylated hexose is a terminal hexose.

25. (New) The method according to claim 23, wherein the phosphorylated hexose is a penultimate hexose.

26. (New) The method according to claim 23, wherein the phosphorylated hexose is M6P.

27. (New) The method according to claim 23, wherein the oligosaccharide comprises two or more M6P groups.

28. (New) The method according to claim 23, wherein the oxidizing step is carried out with periodate or galactose oxidase.

29. (New) The method according to claim 23, wherein the lysosomal enzyme is deficient in a lysosomal storage disease chosen from Fabry disease, Pompe disease, Tay-Sachs disease, Hurler or Hurler-Scheie disease, Krabbe disease, Hunter disease, Metachromatic leukodystrophy, Sanfilippo A and B disease, Morquip disease, Maroteaux-Lamy disease, and Gaucher disease.

30. (New) The method according to claim 23, wherein the lysosomal enzyme is chosen from beta-glucocerebrosidase, alpha-galactosidase A, acid alpha-glucosidase, alpha-N-acetylglucosaminidase, beta-N-acetyl-hexosaminidase, and beta-glucuronidase.

31. (New) The method according to claim 23, wherein the oligosaccharide is chosen from a biantennary mannopyranosyl oligosaccharide and a triantennary mannopyranosyl oligosaccharide.

32. (New) The method according to claim 31, wherein the biantennary mannopyranosyl oligosaccharide comprises bis-M6P.

33. (New) The method according to claim 31, wherein the triantennary mannopyrannosyl oligoscacharide comprises bis-M6P or tri-M6P.

34. (New) The method according to claim 23, wherein the oligosaccharide comprises:

6-P-M (alpha 1, 2)-M(alpha 1, 3)-
M
6-P-M(alpha 1, 2)-M(alpha 1, 6)-

wherein M is mannose or a mannopyranosyl group.

35. (New) The method according to claim 23, wherein the derivatized oligosaccharide has a formula chosen from 6-P-M_n-R and $(6\text{-P-}M_x)_mL_n$-R,

wherein M is mannose or a mannopyranosyl group,

P is a phosphate group linked to the C-6 position of M,

L is a hexose,

R is a compound containing at least one carbonyl-reactive group,

m is an integer ranging from 2 to 3,

n is an integer ranging from 1 to 15, wherein if n>1, the M_n are linked to one another by alpha (1,2), alpha (1,3), alpha (1,4), or alpha (1, 6), and

x is an integer ranging from 1 to 15.

36. (New) The method according to claim 35, wherein at least one L is mannose.

37 (New) The method according to claim 35, wherein at least one L is chosen from galactose, N-acetylglucosamine, and fucose.

38. (New) The method according to claim 23 or claim 35, wherein the compound containing at least one carbonyl-reactive group is chosen from a hydrazine, a hydrazide, an aminooxyl, a semicarbozide.

39. (New) The method according to claim 23, further comprising the step of adding a reducing agent to the coupled lysosomal enzyme.

40. (New) The method according to claim 39, wherein the reducing agent comprises cyanoborohydride.